

## LITERATURE CITED

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## REVIEWS

*Plant Speciation*. By VERNE GRANT. X + 435 pp. Columbia University Press, New York, 1971. \$15.00.

*Plant Speciation* was written to complement the author's earlier work, *The Origin of Adaptations*. In that work he dealt only with the processes and patterns of evolution found in diploid sexual organisms. The present book is intended to be a detailed treatment of those evolutionary phenomena that are unique to plant populations.

Although such an undertaking could have resulted in an important contribution, *Plant Speciation*, in fact, offers little that is new to the student of plant evolution. The book is divided into five sections: Nature of Plant Species, Divergence of Species, Refusion and Its Consequences, Derived Genetic Systems and Evolution of Hybrid Complexes. Much of the classical and current literature in these areas is discussed. In particular, the author's own research over the last twenty odd years is integrated into this body of information.

The fundamental framework of this book represents an approach to plant evolution that has passed its zenith. To be sure, the author is not the only biologist who views the species as a basic biological unit (indeed, he most likely holds the majority opinion). However, alternative considerations to the "species problem" have had a wide acceptance. There are, for instance, a great many biologists (both botanists and zoologists) who emphasize in their own work the population as the basic unit of evolution and regard species only as taxonomic units. This view is not only supported by the fundamental concepts of population genetics but also by the current data on gene flow. These data indicate that the role of gene flow in limiting the differentiation of populations (evolution) is at best minor. In other words, there appears to be no good evidence that gene flow is responsible for integrating populations into natural units called species. There is every reason to believe that it is similar selection pressures operating at different places, and not gene flow, that limits the divergence of populations of sexual organisms just as it is in the case of geographically disjunct groups of apomictic organisms.

In Grant's book, there is no mention of the contributions that the theory and practice of numerical taxonomy and taxometrics have made toward clarifying the "nature of species." Also, noticeably missing is any significant discussion of the role studies of protein analysis (amino acid sequences) and isozyme variation in natural populations have played and will play in our understanding of the processes of plant evolution.

*Plant Speciation* will be of limited use to the beginning graduate student. However, it falls far short of being the successful synthesis *Variation and Evolution in Plants*, by G. L. Stebbins, was two decades ago.—DENNIS R. PARNELL, Department of Biological Science, California State College, Hayward 94542.